UCLA Public Policy
Luskin School of Public Affairs

SOUTHERN CALIFORNIA ASSOCIATION of GOVERNMENTS
50 YEARS

Charging Towards a Green Future: ZEV Growth through the Expansion of Electric Vehicle Charging in Westside* Multi-Unit Dwellings

Yunsheng Luo, Ko Kawaragi, Noriko Magara, Glenn Yamada
UCLA Luskin School of Public Affairs

ABSTRACT

This research highlights the importance of expanding the Electric Vehicle (EV) charging infrastructure within the Westside Los Angeles region to reduce greenhouse gas emissions and improve air quality. Specifically, it presents a set of effective strategies for the Southern California Association of Governments (SCAG) to encourage the installation of EV chargers within multi-unit dwellings (MUDs) throughout cities represented by the Westside Council of Governments.

We propose that outreach and rebates be used as tools to promote EV charger installation. An EV-demand model was used to identify *precise street addresses of buildings with calculated high EV demand*, which will help SCAG and city governments direct an outreach campaign at MUD buildings most likely to adopt EV charging. A *rebate measure tailored to the installation cost profile* of our target MUD group was created from an analysis of installation expenses and Westside building attributes. We believe that outreach activities and rebates should be used together as an effective tandem to persuade MUD owners about EV charging adoption.

*** Westside: Beverly Hills, Santa Monica, West Hollywood, Culver City, west region of Los Angeles.**

REFERENCE

- PtoP methodology: developed by Sam Krumholz (UCLA Luskin Center/UCSD)
- Installation costs: electrician's estimates provided by UCLA Luskin Center
- Other data sources:
  - LA County Assesor Parcel Data
  - U.S. Census Bureau
  - Previous EV sales by IHS Automotive
  - CVRP Consumer Survey

CONTACT

Yunsheng Luo
Master of Public Policy, 2016 Candidate
UCLA Luskin School of Public Affairs
Email: ssdior@ucla.edu

INTRODUCTION

Unlike gasoline-fueled vehicles, EVs do not contribute to air pollution and play a key role in meeting state and local emission goals. However, EV market growth will be restricted without a robust MUD EV charging infrastructure because the availability of home charging is an important factor for EV purchase. Our recommendations focus on the stakeholders who have the authority to install EV chargers within these dwellings: MUD complex owners and management companies who hold approximately 90% of MUDs in the Westside cities.

FACT: MUD owners do not directly benefit from EV charging installation; gas and vehicle maintenance savings accrue to EV owners alone. Therefore, MUD owners have little incentive to invest in these amenities. To overcome these obstacles, we have developed **outreach** and **rebate measures** that respectively address the issues of EV charging awareness and installation cost.

EV DEMAND ANALYSIS

EV Demand (the likelihood of a household to buy an EV or the propensity to purchase an EV) is defined for each MUD complex based on resident income level using a methodology developed by the Luskin Center of Innovation.

Resident income level is estimated based on the property value of a building. The EV propensity-to-purchase score is determined by estimated income level (according to property value), the actual EV owners' income level, and previous EV sales in the area.

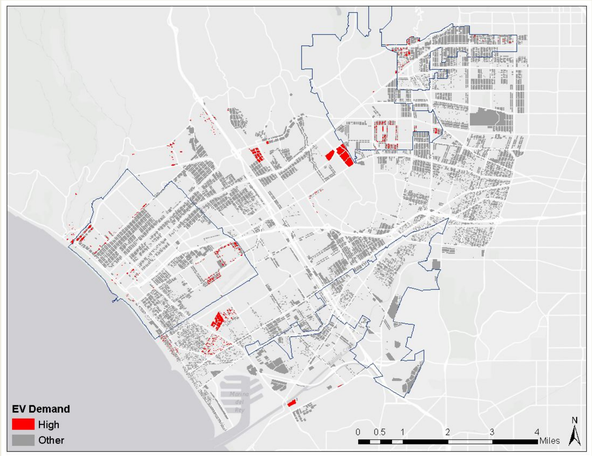

Figure 1. Result of EV Demand Analysis (location of High Demand MUDs throughout Westside region, shown in red)

TARGETED OUTREACH

1. Where are the targeted MUDs?
Based on the EV-demand analysis, precise street addresses of buildings in the Westside that are anticipated to experience EV owner growth are identified.

Governmental organizations can direct their efforts towards the owners of the targeted MUDS.

Figure 2. Result of EV Demand Analysis (location of High Demand MUDs is shown in red)

2. Persuasion strategies for targeted MUDS
Inter-agency partnerships should be established to assist with the collection of contact information for property owners of the targeted MUDs.

We recommend that SCAG partner with the Westside Cities Council of Governments to collect MUD owner data. With this information, SCAG can then conduct one-on-one meetings with MUD complex owners.

Points of persuasion

- Charging stations will give the property a positive "green" image, which can be used for marketing.
- Charging stations can help make the property a leader in sustainable practices.
- As the PEV market grows, the number of requests for charging will increase.
- Charging stations can provide Leadership in Energy & Environmental Design (LEED) points for the property.

Advantage of direct contact: SCAG or city representatives, can immediately address owner concerns about EV chargers and installation in real time and share information about other buildings in the area that have already installed EV chargers.

REBATE PROGRAM

Attributes

1. **A rebate covering a significant portion of installation costs for high demand buildings in the Westside**
   - $7,000/unit will fully cover the installation costs for most of the target MUDs.
   - $5,000/unit will fully cover the costs for 50% of the target MUDs, and provide partial coverage for others.
   - $4,000/unit will fully cover the costs for 40% of the target MUDs, and provide partial coverage for others.

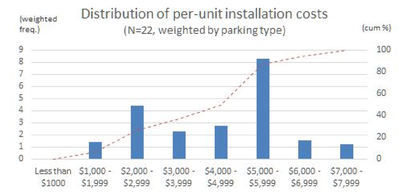

Figure 3. Distribution of per-charger installation costs.

2. **A decreasing installation cost per-charger scale**
   Per-unit installation costs decrease by 13% with the installation of additional units.

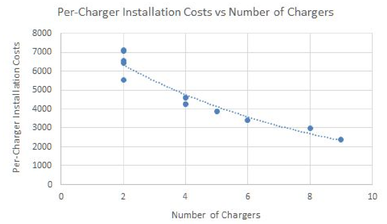

Figure 4. Per-unit installation costs vs. number of chargers

Number of Units	Maximum amount (example)
1	$7,000
2	$12,000 ($6,000 ea)
3	$15,000 ($5,000 ea)
⋮	⋮

Figure 5. Possible policy alternative for rebate program

3. **No eligibility criteria**

Summary

Targeted outreach and rebate programs should be used together as an effective tandem to motivate MUD owners to install EV charging stations.